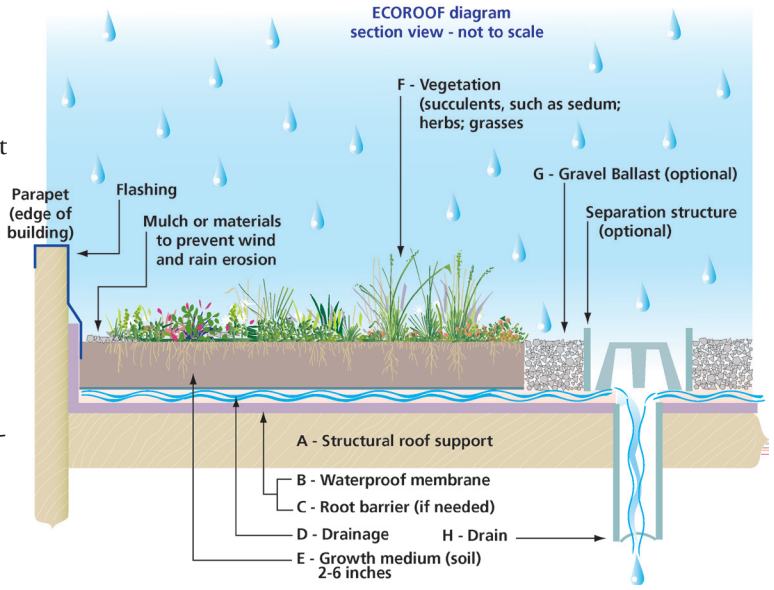
FACT SHEET

GREEN ROOFS

GREEN ROOFS are vegetated roof systems that passively perform no less than 8 highly beneficial and cost-saving functions, including stormwater runoff reduction, heating and cooling load reduction, and extending the service life of the roof by 40 to 60 years. Green roofs also mitigate urban heat island effect, absorb CO_2, sequester air-borne particulates, provide urban wildlife habitat, reduce noise pollution, and more services that benefit not only the building, but also the surrounding community. *See below for incentives your community might offer to help you build an eco-roof on your building.*



Ecoroof graphic courtesy of City of Portland, Bureau of Environmental Services

DEFINITIONS

Intensive green roofs, n. also known as "roof gardens," contain greater than 6 – 12 in. depth growing medium; garden-like and frequently used to grow vegetables or as urban gardens.

Extensive green roofs, n. also known as "ecoroofs," contain less than 6 – 12 in. depth growing medium; typically not accessible, available as prefabricated system.

LEED

SS CREDIT 5.1
Protect or Restore Open Space

SS CREDIT 6.1
Stormwater Management

SS CREDIT 7.2
Reduce Heat Island Effect

INCENTIVES

Many municipalities find value in the services green roofs provide, especially in highly urbanized areas. The value is so great, that several incentives may be available thus making the initial cost of a roof compatible to a conventional roof. Some examples include:

- Faster approval/construction permitting process
- Reduced stormwater/wastewater system development charges
- Reduced stormwater/wastewater usage fees
- Reduced size of stormwater management ponds or cisterns
- Grants rewarding energy efficiency or economic and environmental objectives
- Density bonus / larger floor area ratio
- Satisfy minimum parkland / green space requirements
- Greenhouse gas emissions trading credits, stemming from energy savings

ADDED VALUE

Installation cost of a green roof can range from $10/sq ft to $50/sf ft or more depending on the type of green roof you want, plant selection and availability. Savings will vary as well. Keep in mind that the benefits a green roof provides increase with depth; deeper growing medium means better stormwater runoff control, reduced heating and cooling loads, and more dampening of sound. However, deeper growing medium usually adds weight which adds costs.

GREEN ROOF COST COMPARISON

	Conventional Roof	Green Roof
New Construction (including structural support)	$3-9/sq ft	$10-15/sq ft
Re-roofing	$5-50/sq ft	$15-50/sq ft

Although green roofs initially cost more than conventional roofs, they are competitive on a life-cycle basis because of reduced maintenance and replacement costs.

Source: Bureau of Environmental Services estimates based on City of Portland demonstration projects, and information obtained from roof contractors.

CASE STUDY

FAIRMONT WATERFRONT HOTEL

Green roofs can reduce building operating costs and be valuable amenities in an urban environment, but imagine growing enough food on a green roof to achieve a one-year payback period. That's exactly what the Fairmont Waterfront Hotel realized when they spent $25,000 CAD to install a 2,100 sq ft green roof with a soil depth of 18-inches. The green roof is used to grow herbs and vegetables for the hotel's restaurant. Annual food production saves the hotel an estimated $25,000 to $30,000 in herb costs alone. Harvesting begins at the end of March with chives, pansies and sorrel, followed by tulips. In the summer, the gardeners take at least four huge bus trays—about 50.8 cm x 30.5 cm x 10.2 cm (20 in. x 12 in. x 4 in.) deep— of herbs down to the kitchen each week. Occasionally, the chefs even visit the roof to harvest fresh herbs and vegetables for their creations.

Courtesy of Canada Home Mortgage

RESOURCES

THE FOLLOWING RESOURCES SERVE AS A STARTING POINT FOR A LARGE QUANTITY OF AVAILABLE INFORMATION:

GREEN ROOFS FOR HEALTHY CITIES

www.greenroofs.org

GREEN ROOF MANUFACTURERS

www.greenroofs.com

PSU BROADWAY BUILDING GREEN ROOF

Ongoing monitoring showing insulative properties and stormwater management.

www.sustain.pdx.edu/gb_projects_broadway.php

WHOLE BUILDING DESIGN GUIDE

www.wbdg.org/design/greenroofs.php

PUGET SOUND ONLINE

www.psat.wa.gov/Publications/LID_studies/green_roofs.htm

ECOROOFS Q&A

By the City of Portland Bureau of Environmental Services

www.portlandonline.com/bes

FOR MORE INFORMATION ON THIS TOPIC AND OTHERS, VISIT

www.cascadiagbc.org

Total Project Budget: $25,000 CAD

Green Roof (Herb Garden) Size: 2,100 sq ft

Intended Use: Aesthetic amenity to adjacent suites and herb garden for hotel restaurant

Location: Vancouver, BC

Photos courtesy of Musson, Cattell, Mackey Partnership